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ABSTRACT

Ideas for an elementary level interdisciplinary teaching unit which were generated from a drive taken in the plains country of eastern New Mexico are presented. The purpose is to show what could be included in a unit on the immediate environment. In social studies classes, students can read a map of the area of the drive. An interest in history can be created by describing picturesque places visited or the history of some of the small towns. A map of the area traveled through can also be applied to arithmetic. For example, miles per gallon, as well as miles per hour, could be computed between points, or an imaginary tour of the area could include budgeting for food and lodging, plus estimated times of departure and arrival. With regard to art education, artists from the local area can speak to the class or students can visit the exhibits of local artists. Unit teaching and language arts are natural partners. For example, listening skills can be improved as students listen to the teacher and their peers as the unit is discussed. Speaking is also involved as students interact with their fellow classmates and the teacher. In science classes, students can discuss the water cycle of the arid New Mexico region. Windmills, which are in abundance in the Southwest, farming, and fossils found near the small town of Portales are additional topics of interest to science students. The ideas from this unit of study can be adapted to teaching about other parts of the country. A road map of New Mexico and a 17-item reference list are appended. (RM)

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A Weekend Drive:

Source for an Interdisciplinary Teaching Unit

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A WEEKEND DRIVE:

SOURCE FOR AN INTERDISCIPLINARY TEACHING UNIT

Introduction

Curriculum specialists, teacher trainers, supervisors, and other administrators should consider the value of unit teaching even though each may approach instruction from a different perspective. In any event they need to (a) guide pre-service teachers and in-service teachers through the steps in how to teach a unit of work and (b) train classroom teachers to help their students appreciate the rich learning environment in which they live. Zintz (1980, pp. 159-160) says:

> In unit teaching, there is need in the beginning to arouse interest based on what everybody already knows and what everybody would like to learn. This requires free discussion. Then there is need for organized, fairly formal planning so that everyone can go to work efficiently to find information. Next, the unit plan requires sharing in committees, writing about information gained, discussing in small groups, and talking together quietly to crystallize thinking. Then, the entire group is ready to share, question, agree or disagree, and summarize. Finally they need some method to demonstrate that the original objectives for the unit of study have been met.

An interdisciplinary teaching unit which incorporates many content areas may be named or identified in a variety of ways. Armstrong, Henson and Savage (1981, pp. 79-80) write about the Broad-Field Curriculum. Riedsel (1980, pp. 134-136) discusses Interdisciplinary Problem Solving;

Jacobson and Bergman (1980, p. 40) address the issue in a section entitled, "The Science Unit," while Esler and Esler (1981, pp. 74-91) devote an entire chapter, entitled, "Integrating Science with Other Subjects," to the question. According to Michaelis (1980, p. 312) students can express their thoughts and feelings in each unit of instruction through creative writing, simulation games, music, arts and crafts, construction and processing of materials.

Unit teaching, though not a panacea, has the following values (Shepherd and Ragan, 1982, p. 156):

1. Units of work provide for the range of individual differences. No two children need to read or respond to exactly the same thing.

2. Units of work adapt easily to the characteristics and resources of the community.

3. Units of work invite the integration of subject matter for many subject fields.

4. Boys and girls can utilize many concrete materials.

5. Assignments can provide activities to develop initiative, responsibility, cooperation, and problem solving.

6. The information gained should be readily related to life in the environment and thus, remembered.

In planning a teaching unit one must consider the "how" and "what." The preceding paragraphs are general outlines of how to teach a unit. The remainder of this paper is concerned with what could be included in a teaching unit placing particular emphasis on the immediate environment.

No special training is required of a person who wishes to observe the wonders of nature and the environment. Young children do so very

easily when they exclaim about a flower, the sounds of a bird singing, the smell of play dough, or the movement of hands on a clock. Adults, on the other hand, are in many instances so busy that they don't "see" the wonders about them, and less seldom do they think about these wonders and enjoy the thoughts of applying man's knowledge to that which they have failed to observe. Educators are not immune to this wasteful misuse of their intellect and senses. There is an abundance of man-made marvels, plants, animals, or places in the immediate surroundings which could trigger ideas for an exciting unit of work for elementary school children. The initial idea generates other ideas and may serve as the basis for a teaching unit which includes several disciplines and the skills related to the content areas.

During a weekend's drive the author observed the surroundings and thought about the observations. The drive was taken in the plains country of eastern New Mexico. (See Figure I.) The figure of the geographic area driven can be described as a quadrilateral with a perimeter of approximately 286 miles. Ideas for a unit, listed on the following pages, were generated from that trip.

Social Studies

Map reading may begin with an introduction about the points of the compass. (See Figure I.) The east side, bounded by New Mexico State Highway 18 can be further explained by beginning at the northeast corner and working south. The localities used to specify points on the boundary provide an excellent source for creating an interest in history. The following description of picturesque places named illustrates the point.

PORTALES is the point of embarkation. Pearce (1965, pp. 124-125) defines Portales as Spanish

"porches, gates" . . . . Named for Portales Springs. Founded in 1898. Portales Springs . . . . One of the regular watering places on the Ft. Sumner trail. The earliest settler . . . moved to the springs in 1881. When he first arrived, he lived in the caves from which the springs flow. The caves resemble the porches of Mexican adobe houses, hence the name.

Twenty-one miles south of Portales is the village of PEP. It is "said to have been named by Harold Radcliff in the depression days, for the breakfast cereal of the same name" (Pearce, p. 119). Twenty-two miles south of Pep is CROSSROADS, an oilfield and ranching community. "Named because there was an intersection here when the post office was established in 1923" (Pearce, p. 42). Forty miles south of Crossroads is the town of LOVINGTON, county seat of Lea County. "Named for R. F. (Florence) Love, who in 1903 settled upon a section where the town of Lovington is located" (Pearce, p. 93).

Moving west from Lovington on N. M. State Highway 83, the southern border of the map, is located the town of MALJAMAR. It was named for "three children of William Mitchell: MALcolm, JAnet, and MARgaret" (Pearce, p. 95). Fourteen miles west of Maljamar is the village of LOCO HILLS, near the intersection of N. M. Highways 82 and 83. Loco in Spanish means "crazy" or "insane." The hills near the town are called loco hills. Twenty-five miles west of Loco Hills is ARTESIA. "In 1894, the old stage line ran through what is now the city, where there was a spring . . . . The town was named Artesia because of the discovery of artesian water in the vicinity" (Pearce, p. 11).

Turning north on Alternate Highway 285, twenty-six miles north of Artesia is the town of DEXTER, named by "a farmer and pioneer in the

community who chose the name of his home town in Iowa" (Pearce, pp. 46-47). Nineteen miles north by northwest of Dexter is the city of ROSWELL. It was named by "Van C. Smith for his father, Roswell Smith, of Omaha, Nebraska. Smith was a professional gambler" (Pearce, p. 138). The first land claim in Roswell was filed in 1871.

About ten miles east and six miles south of Roswell is the location of BOTTOMLESS LAKES STATE PARK. It was named "by cowboys in the early days, who measured the depth of the water by tying several lariats together as a plumb line. They found no bottom, and pronounced the pools bottomless" (Pearce, p. 20).

The northern border of the map runs diagonally northeast between Roswell and Portales. HIGH LONESOME is an abandoned settlement about twenty-five miles northeast of Roswell. "This intriguing name seems to have been sufficiently appropriate and popular to be used in three separate counties" (Pearce, p. 70).

About twenty-six miles northeast of High Lonesome is the village of KENNA. It was originally named "Urton" for two brothers who came to the region from Missouri in 1884" (Pearce, p. 78). The name, Kenna, may have come from a contractor by that name who helped build the railroad or from the name of E. D. Kenna, vice president of the railroad. Continuing northeast thirty-five miles is the town of PORTALES, the beginning and ending point of a clockwise movement around the boundaries of the map.

The author visited a fourth grade class, told them about how some of the towns in the area were named, and asked each student to name and describe an imaginary town. Two edited samples of the writing follow.

The Town of Rabbit's Teeth

by Crista Powell

Far away there is a town called "Rabbit's Teeth." Now that might seem sort of strange to you, but if you know why it is called that, you would see why. But for those of you who don't know, I will tell you.

You see, one time there was this family who owned a marketing business. One day some people from Aspermont, Texas, called this family and asked them if they could take a trip to Aspermont and bring them some seeds to make a garden behind their house. They said that they would pay all of the expenses for the family to go there. Well, see in those days there wasn't such a thing as mailing things from place to place, and the family did need the money from selling seeds, so they agreed to go. The next day they started off for Aspermont.

After they had gotten halfway they were driving along and all of the sudden they heard something. Now it was a rainy night, but the man pulled over to the side along a muddy field, and got out to see what was the matter. When he got out and opened his door, some seeds from the carrot and lettuce packages fell out and the wind carried them away to the field. The man couldn't get his tire fixed after a few days, and no one was around to help him, so they had to stay there.

One morning the man noticed that something was in the field that hadn't been there before. So he went over to look at it, but his wife stayed in the car. All of the sudden his wife heard him shouting. She quickly ran over to see what was wrong, and when

she got there, she too shouted. You see, where the seeds had blown into the field, some carrots and lettuce heads had grown, and back in their town no one had ever been able to grow these things.

The man said, "We've got to get the tire fixed so we can go back and show the town!"

Just as he said that, a car stopped along the field, too. This was very unusual that somebody would come along this road. But in a few hours the men had the car fixed. So the people thanked the man and went to gather the carrots and the lettuce heads.

Just as they came to get the vegetables, a rabbit hopped away with a carrot and some lettuce in his mouth. They just laughed because the rabbit was so cute with his big front teeth just chewing away. So when they returned to their town, they told the people their story, and everyone decided to call the town "Rabbit's Teeth."

So that's how it became known as "Rabbit's Teeth" and now they grow lots of carrots and lettuce. Oh, I don't know whether the family ever took some seeds to that man in Aspermont, Texas.

The End

Disappearock

by Shawn Brumfield

My town is called "Disappearock." It was named that because one day a man was talking to his mother. The man was a paleontologist. He had come to visit his mom. After two days a sandstorm came up and it was so bad the people moved out. When they returned after the storm, the town was gone. Well, one day a couple moved to New Mexico. While they were in Colorado, they saw the town that

had disappeared. Only one thing was wrong. How did a town move from the state of Washington to the state of Colorado? And another thing, the town was fossilized, and that's how it got its name. By the way, no one knows where it went when another sand storm blew it away. They think it's in Canada.

Arithmetic

The map in Figure I may be applied to arithmetic. It could initiate a discussion of geometric figures such as quadrilateral, polygon, rectangle, triangle, distance, perimeter, area, parallel lines; greater or less than in distances; populations of communities; size of print; etc. Miles per gallon as well as miles per hour could be computed between points. An imaginary tour of the area could include budgeting for food, lodging, plus estimated time (a.m., p.m.) of departure and arrival. In Figure I the quadrilateral may be redefined as two figures--one of which approximates a rectangle and the other a scalene triangle. Areas and perimeters of the two figures can be stated as formulas. Written or word problems could be generated by students in the class. In any of the preceeding mathematical concepts addressed directly or indirectly, computational skills development in addition, subtraction, multiplication, and division could be applied to problems related to the concepts. Depending on the needs of individual students as determined by inventory and/or diagnostic tests such as those found in comprehensive texts such as Stein's (1980), the following are examples of problems which could appropriately be used.

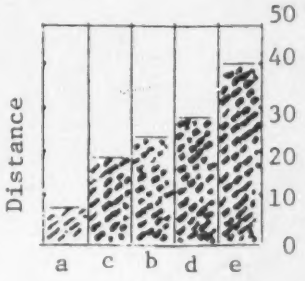
1. Is it farther from Portales to Roswell than from Portales to Lovington? _____ If so, how much? _____
2. It is fourteen miles between Maljamar and Loco Hills. Convert the miles to kilometers.

3. The formula for finding the area of a triangle is base x height divided by two or $A = \frac{bh}{2}$. What is the area in square miles of the triangle whose sides are Roswell-Portales (RP), Portales-Crossroads (PC), and Roswell-Crossroads (RC)? _____

   Which angle, RPC, PCR, or PRC has the greatest number of degrees? _____

4. From the following make a simple bar graph (vertical columns) showing successively greater distances, with the least on the left to the greatest on the right.

   a. DORA to PEP (7 miles)
   b. ELIDA to PORTALES (24 miles)
   c. ELKINS to KENNA (19 miles)
   d. LOVINGTON to MALJAMAR (26 miles)
   e. ARTESIA to ROSWELL (40 miles)



Art

Art, as a product of a teaching unit, is an expression of an individual's perceptions followed by abilities to transform the perceptions into a picture, song, dance, or some other artistic accomplishment. Elementary school children, if not discouraged, are artists in the true sense of the word--they create. Their work is refreshing, honest, and though at times a bit out of proportion, extremely colorful and pleasing to the viewer.

Within most communities there are adults whose artistic accomplishments are at least noteworthy. Whether their specialty be woodcarving, water-coloring, oils, or one of many other art media, local persons are excellent resource persons who will generally serve as models and inspirations for the fledgling student artist or for those who simply want to illustrate

something they have written. One artist in this area worthy of emulation is Peter Hurd. He is a world-renowned artist. The Roswell Museum has a permanent collection of many of his works on display. Among them are: Rain at Midday, The Shepherd, West Bound Freight, The Gate and Beyond, and The Bonfire (The Roswell Museum and Art Center).

Language Arts

Although some experts may include subcategories in a definition of language arts, many would accept the four skills of listening, speaking, reading, and writing, as being sufficiently inclusive. Langacker (1967, p. 16) states, "language acquisition is species uniform and species specific. All human beings learn a language, but not other animals, not even the most intelligent ones, attain to anything comparable." This implies that language is unique to humans; and if school is defined succinctly as a "world of words" which are encoded and decoded; then language arts are inseparable from other subjects.

Unit teaching and language arts are natural partners. Listening skills can be improved as students listen to the teacher, peers and as they "listen" to their thoughts as a unit is discussed. Speaking is also involved as students interact with their fellow classmates and the teacher during the preliminary discussions about the unit, during active involvement as the unit develops, and during final oral presentations if included in a culminating activity. From several reading methods which could be employed the author favors language experience and/or individualized instruction. Harris and Sipay (1980, p. 55) (quoting A. J. Harris and Serwer, 1966), describe a language experience approach as one in which:

> emphasis is placed on the teaching of reading in close correlation with the related activities of listening, speaking, and writing.

Children are encouraged to express their thoughts, ideas, and feelings, often stimulated by a specific experience guided and developed by the teacher. The verbal productions of the children are written down by the teacher in the early stages, and are used as the earliest reading materials. Pupil expression is encouraged through the use of a variety of media such as painting, speaking, and writing. Gradually the program moves from exclusive use of reading material which is developed out of the oral language of the children, into a program of reading in which increasing emphasis is placed upon a variety of children's books.

Individualized reading, according to Zintz (1980, p. 132), "promotes the principles of self-motivation, self-selection, self-pacing and self-evaluation." If children are encouraged by the teacher, they "have opportunities to show their ingenuity and creative ability in art, writing, dramatic arts, and other fields while stimulating each other to read more books of good quality" (p. 136).

Science

Within the high plains country of Eastern New Mexico one could discuss the water cycle in that moisture which falls in the area bounded by the map (Figure I) drains as runoff into the Pecos River, which is a tributary of the Rio Grande River, which empties into the Gulf of Mexico, which is a part of the Atlantic Ocean. The moisture in each of these evaporates, is transformed into clouds and eventually precipitates back to earth. The scientific principle of the water cycle exists even in arid regions. The scarcity of water in arid or semi-arid regions influences the flora, fauna, and avifauna.

Windmills, though often associated with tulips and the Netherlands, are found in abundance in the Southwest. Wind energy is used to turn the blades on a windmill, which then mechanically pump water from the ground. Windmills and poles for power lines tower above the prairie grasses, mesquite bushes and other types of vegetation on the road between Portales and Lovington and west to Artesia. The windmills and the poles, in some instances, have become "nesting trees" for the American crow. Harrison (1978) notes that crows nesting on telephone poles are the exception. In the geographic region just described, the lack of tall trees has forced the crow to adapt to the environment. The lack of heavily-timbered areas is, however, suitable for some animals. For instance, jack rabbits, coyotes, and antelope can often be seen by an alert observer.

Farming is usually associated with the production of food for humans and animals. Another use for certain crops is converting them into gasohol. A gasohol conversion plant is currently in existence in the Portales area. The plains are rich in natural resources such as petroleum and potash. As solar energy is developed in the future, the abundance of sunshine throughout most of the days of the year in the "sunbelt" suggests the area is uniquely fitted by nature to become an area for generating electrical energy from solar energy. Energy-efficient homes can be constructed to utilize solar energy. Some of these homes exist presently and the number will probably increase appreciably in the future.

Fossils, including giant mammoths, dinosaurs, sabre-toothed tigers, horses, camels and remains of other prehistoric life are of interest to students. Portales is ideally situated geographically in that it is rich archaeologically. A few miles from town is an archaeological dig

known as Blackwater Draw Archaeological Site. The first scientific excavation occurred in 1932. Fossils have been recovered and classified from an era identified as Clovis Hunters, dated 9300 B.C. (Hester, 1972).

Star Wars, E. T., space travel, the moon, planets and stars and rockets are of interest to children in elementary school. "MAN IS NOW on the moon because on March 16, 1926, a man successfully tested the world's first liquid fuel rocket. That man was Dr. Robert H. Goddard" (The Roswell Museum and Art Center, 1970, p. 10). From 1930-1941 Goddard conducted his rocket research near Roswell, New Mexico (Durant, 1973). The Goddard Rocket and Space Museum has on display many components and primitive rockets from his early experiments. The space shuttle, which landed at White Sands Missile Testing Center in 1982, is a technological outgrowth of Goddard's early experiments.

Possible Activities

Activities for investigation and educational inquiry inherent in unit teaching are virtually limitless for individuals, small groups, or entire classes of students. The teacher should be mindful of the cognitive, affective and psychomotor development of the students and adapt the unit to their needs and capabilities. The following list of suggested activities is representative of possibilities, but is limited due to space for printing.

1. Plan a field trip to the Blackwater Archaeological Dig. Include integrated information such as: Where is it? Who discovered it? Has anything been written about it? Does anyone know personally an individual who participated in the dig? Is it dangerous? Are there any rattlesnakes there? Is it open to the public or must permission be obtained prior to the visit? What date shall the field trip be held? Do any

parents want to accompany the group? Do students have fossils for "show and tell"? What can be observed going to and from the site? How much cost per individual? How much cost per mile? What direction is it from school? What vocabulary words should be taught before the field trip? Will ideas be gotten for language experience stories? Can the setting be remembered for a later art activity? Does any student know the meaning of "archaeology"? Does the suffix, "-ology," mean anything? How should students conduct themselves on the trip? What is appropriate clothing? What procedures should be planned in the event of an accident? What is the round-trip total in metric units? What is the general configuration of the site? What is the approximate perimeter of the archaeological area? What does the "pre" in "prehistoric" mean? Does the "pre" in "pretend," "precious," "precede," "president," or "pretty" mean the same as in prehistoric?

Conclusion

The beginning of this article addressed the question of "how" to teach a unit. The remainder of this article was concerned with "what" to teach with an emphasis on the immediate environment of eastern New Mexico. The communities, natural resources, flora and fauna, terrain, climate, etc., may be somewhat unique to the region. This does not preclude adapting the idea of unit teaching in other parts of the country. For instance, California has Sutter's Mill, the San Andreas Fault, Giant Redwood Trees, and the Comino Real. Florida has the Everglades, hurricanes, crocodiles, the ocean, and St. Augustine, the oldest permanent settlement on the mainland of the United States. Virginia has the world's largest naval station at Norfolk, Shenandoah National

Park, the first English settlement in the United States, Jamestown, and Alexandria, which is near Washington, D. C.

Regardless of location, natural and man-made wonders are accessible in all parts of the United States. They can be ignored, or from them both enjoyment and learning can occur. Of the choices, the latter is unquestionably the better of the two.

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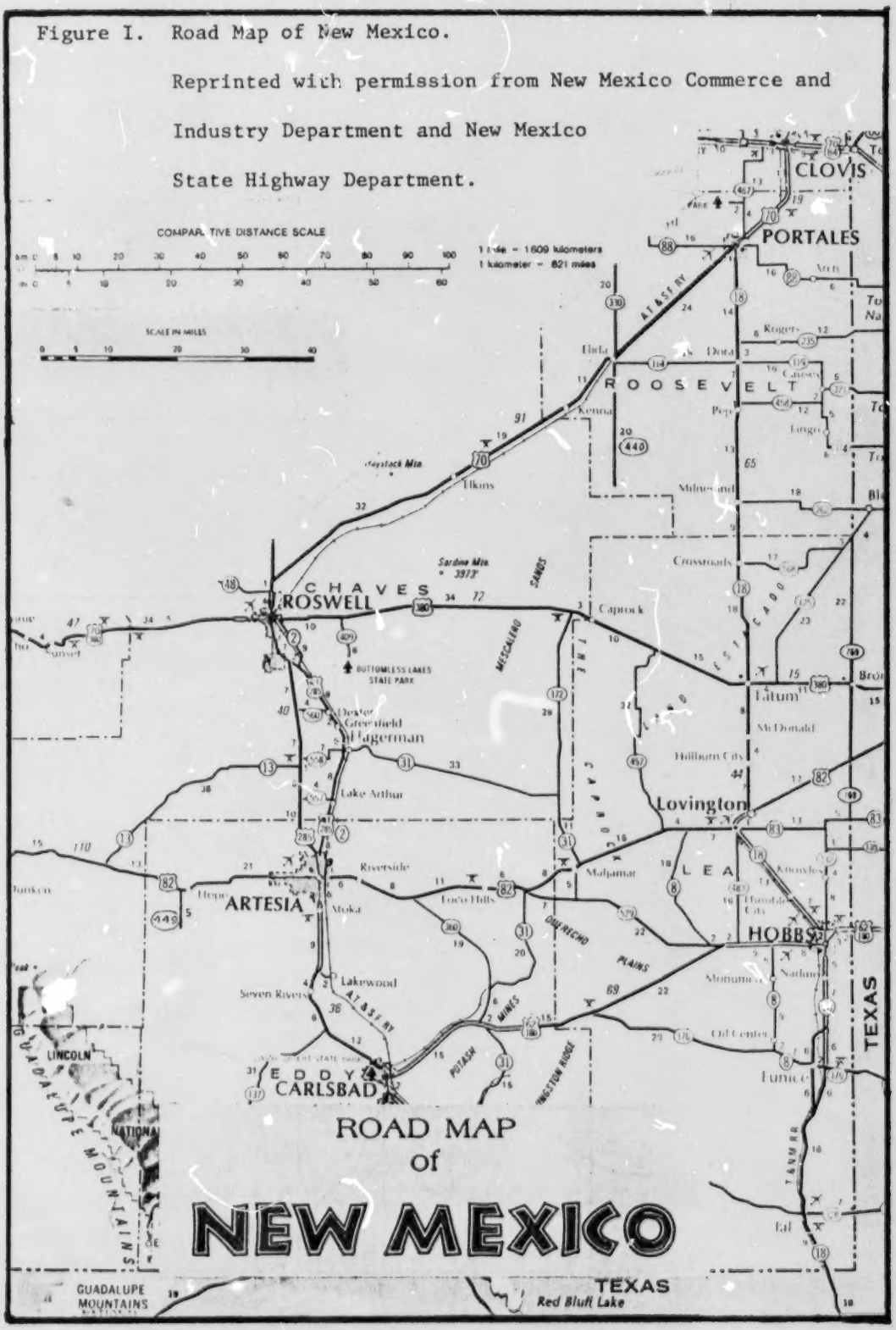
Figure I. Road Map of New Mexico.

Reprinted with permission from New Mexico Commerce and Industry Department and New Mexico State Highway Department.



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